CS1555 Recitation 10

**Objective:** JDBC PostgreSQL Guide – Database Programming

Part 1: Link to the local PostgreSQL server using JDBC [IDE]

1. Download the java demo code at:

<https://db.cs.pitt.edu/courses/cs1555/21-1/recitations/jdbc_example.zip>

1. Run the r10\_db.sql. This will create a new schema for this recitation.
2. In the each .java:
   1. Change both the database username and password (line 13) your credentials.
   2. Change the database URL if necessary (line 10) to: jdbc:postgresql://localhost:5432/
3. Download the JDBC driver at:  
   <https://jdbc.postgresql.org/download/postgresql-42.2.18.jre7.jar> (Java 7)  
   <https://jdbc.postgresql.org/download/postgresql-42.2.18.jar> (Java 8)
4. Add the library to the project and run the examples

**Example 1:** Connect to database using JDBC

Compile and run *JavaDemo.java*. This example connects to the local database and retrieves the tuples. Try to get the **class** number for the **students** table.

**Example 2:** Programming with cursors and extract the data type using JDBC

Compile and run *JavaDemoCursor.java*. This example connects to the local database and retrieves the tuples using a cursor. What is TYPE\_SCROLL\_INSENSITIVE and CONCUR\_READ\_ONLY?

**Example 3:** Handling exceptions using JDBC

Compile and run JavaDemoException.java. This example connects to the local database but fails to find the table. Check what values we can get from SQLException.

**Example 4:** Avoiding SQL injection using JDBC

Compile and run *JavaDemoInjection.java*. Try to gain access using SQL injection (e.g., login). Change the **password** variable, which represents the input password.

Compile and run JavaDemoWOInjection.java. Try to do the same here. What do you observe?

**Example 5:** Transactions using JDBC

Compile and run *JavaDemoTransaction.java*. This example connects to the local database and inserts two students using two insertion statements as one transaction.

Part 2: Link to the local PostgreSQL server using JDBC [Command Line]

1. Download the java demo code JavaDemo.java at:

<https://db.cs.pitt.edu/courses/cs1555/21-1/recitations/jdbc_example.zip>

1. In the JavaDemo.java:
   1. Change both the database username and password (line 13) your credentials.
   2. Change the database URL if necessary (line 10) to: jdbc:postgresql://localhost:5432/
2. Download the JDBC driver at:  
   <https://jdbc.postgresql.org/download/postgresql-42.2.18.jre7.jar> (Java 7)  
   <https://jdbc.postgresql.org/download/postgresql-42.2.18.jar> (Java 8)
3. Put all files into one folder
4. Compile the code using (for example):

javac -cp postgresql-42.2.18.jre7.jar JavaDemo.java (Java 7)

javac -cp postgresql-42.2.18.jar JavaDemo.java (Java 8)

For Windows:

javac -cp "postgresql-42.2.18.jre7.jar:." JavaDemo.java

javac -cp "postgresql-42.2.18.jar;." JavaDemo.java

1. Run the code using (for example):

java -cp postgresql-42.2.18.jre7.jar:. JavaDemo (Java 7)

java -cp postgresql-42.2.18.jar:. JavaDemo (Java 8)

For Windows:

java -cp "postgresql-42.2.18.jre7.jar;." JavaDemo

java -cp "postgresql-42.2.18.jar;." JavaDemo